NATIONAL INSTITUTES OF HEALTH
WARREN GRANT MAGNUSON CLINICAL CENTER
NURSING DEPARTMENT

SOP: Care of the Patient Undergoing Intraaortic Balloon Pump (IABP) Therapy

I. Essential Information

Intra-aortic balloon pump (IABP) therapy or counterpulsation is short term treatment designed to increase coronary perfusion, increase systemic perfusion and decrease myocardial workload and afterload.. The IAPB inflates and deflates in concert with the mechanical cardiac cycle.
The physician inserting the IAPB must be aware of adverse effects associated with percutaneous sheath introduction including: bleeding at insertion site, limb ischemia, vessel trauma and thrombosis.
The IAPB catheter should not remain inactive, i.e. not inflating or deflating, for more than **30 minutes** due to potential for thrombus formation

II. Preinsertion:

A. Assessment/Interventions

1. Assess patient for absolute and relative contraindications for IABP therapy. Absolute contraindications are: moderate to severe aortic insufficiency, thoracic or abdominal aortic aneurysms. Relative contraindications are considered using risk to benefit ratio in patients with severe aortoiliac disease, major coagulopathies, and terminal diseases.
2. Assess patient's peripheral pulses, distal capillary refill, and temperature.
3. Obtain baseline cardiopulmonary assessment.
4. Obtain baseline laboratory values (CBC, Platelet Count, PT,PTT, Acute Care).
5. Instruct the patient and family regarding the purpose of IABP therapy, what to expect, signs and symptoms to report. Provide with teaching pamphlet "Balloon Pump Therapy, When Your heart Needs Help" available at http://www.datascope.com/ca/caballoonpumptherapy.html
6. Obtain IABP console and place at bedside.

7. Prepare arterial pressure monitoring line and connect to IABP transducer cable. Refer to Nursing Department Policy and Standards of Practice “Care of the Patient with an Arterial Line”. (Provide Link to Arterial Line SOP)
8. Zero and level the transducer at the phlebostatic axis.
9. Assess quality of the transducer waveform.
10. Connect patient to the IABP ECG monitoring leads. Label each lead with the letter “B” to distinguish the IABP electrodes from the bedside monitor electrodes.

III. During Insertion:

A. Assessment:

1. Comfort and reassure patient as indicated. If using conscious sedation refer to the Medical Executive Committee Policy and Nursing Department SOP “Care of patient Undergoing Conscious Sedation. (Provide Link)
2. Assess and maintain good quality “triggering” on the IABP console.
3. Assess quality of aortic root pressure waveform.

B. Interventions

1. Refer to nursing procedure for insertion of IABP for complete insertion (link to procedure).
2. Encourage patient to notify team for any onset or increase in chest pain or discomfort.
3. Connect arterial pressure monitoring line to IABP catheter when requested by physician.

IV. Post Insertion:

A. Assessment

1. Check insertion site for bleeding and hematoma q15 minutes x 4, then q 30 minutes x 2, then q 1 hr x 2 and then q 2 hr. Observe area anteriorly and posteriorly. Immobilize the extremity with the IABP insertion site.
2. Monitor differential toe temperatures and capillary refill q 2 hr. Check peripheral pulses q 2 hr. Note in particular left radial pulse and pulses in affected leg. Document on approved medical form. Pulse oximeter may be placed on the affected leg to monitor pulse quality.

3. Assess neurologic function q 2hr. Consider use of sedation, anxiolytic therapy as indicated.
4. Monitor for signs of balloon leak: frequent augmentation alarms, blood in extender tubing or if IAB catheter is idle for greater than 30 minutes, notify physician for appropriate intervention. Note: Never let the balloon set immobile for more than 30 minutes.
5. **If blood is noticed in the pneumatic tubing (helium tube) disconnect the balloon from the pneumatic tubing immediately and notify the physician.**

B. Interventions

1. Timing- Set inflation to occur at the onset of the dicrotic notch (diastole) of the arterial waveform creating a crisp "V" pattern in the waveform.
2. Timing- Set deflation to occur just prior to the next onset of systole producing a "U" shape in the waveform just prior to the upswing of the next unassisted systolic waveform.
3. Obtain a STAT portable chest xray. Place sign in room that all PCXR's will be done flat and HOB is not to exceed 30 degrees in elevation.
4. Care and troubleshooting of the central aortic pressure line should be conducted with the same considerations as a standard arterial line. (Provide link). Do not draw blood from the arterial line of the IABP unless a physician so orders.
5. Strict I&O. Document on approved medical record form q1 hr. Ensure foley catheter is in place.
6. Monitor VS q 15-30 minutes until stable then q 1 hr and document on approved medical record form.
7. Initiate, monitor and maintain anticoagulant protocol as ordered.
8. Change IABP dressing q 24 hr for gauze dressing and q 72 hr for Opsite dressing.
9. Maintain adequate ECG triggering and aortic pressure tracing. Post EKG tracing, IABP pressure tracing while in 1:2 mode and place on approved medical record form. ECG triggering is always the preferred trigger. All other modes of IABP triggering must follow the manufacturer's recommendations as listed in the trouble-shooting manual attached to each IABP console.
10. Change helium tank when level is < 400 psi.
11. Maintain IAB on AutoFill at all times. If not on Autofill, balloon must be filled q 2 hr manually and documented as such.

V. IABP Removal:

A. Assessment:

1. Assess for post-procedure complications (rebleed, hematoma, loss of distal pulse, dysrhythmias, chest pain, and ECG changes).
2. Monitor vital signs, puncture site and distal pulses q 15 minutes x 4,then q 30 minutes x 2, then q 1 hr x 4, then routine.

B. Interventions:

1. Discontinue anticoagulation therapy prior to removal as ordered.
2. Obtain PT, PTT, CBC, and Platelet count prior to removal.
3. Maintain bedrest per physician order with head of bed less equal to or less than 30 degrees elevation and affected leg is kept straight.
4. If patient rebleeds at catheter site: find pulse above the insertion site and hold pressure with a gauze sponge until hemostasis is achieved. Do not totally obliterate distal pulse.

VI. Documentation:

A. Check and record on the IABP flow sheet q shift and whenever changes are made:
   a. Zero transducer
   b. Trigger
   c. Balloon volume
   d. Timing
   e. Slow gas alarm status
   f. IABP: Auto
B. Check and record on IABP flow sheet q 4 hr and whenever changes are made:
   a. Diastolic dip
   b. Diastolic augmentation

c. Unaugmented systolic and diastolic
d. Diastolic difference
e. Augmented systole
f. IABP frequency

C. Document on flowsheet differential toe temperatures and capillary refill q 2 hr.
D. Document peripheral pulses q 2 hr. Note in particular radial and pedal pulses in affected leg.
E. Patient and family teaching.

VII. References:

1. Millar, S.;Sampson, L.K.; Soukup, M., AACN Procedure Manual for Critical Care, W. B. Saunders Company, Philadelphia, 2001
2. Shinn, A.E.; Joseph, D.; Concepts of Intraaortic Balloon Counterpulsation, Journal of Cardiovascular Nursing 1994; 8 (2):45-60
3. NIH CC Nursing Department Standards of Practice "Care of Patient with an Arterial Line".
4. Critical Care Medicine Department, Critical Care Therapy Section, Hemodynamic Monitoring Procedure
5. AACN Procedure Manual for Critical Care. ,eds Debra J.Lynn-McHale and Karen Carlson. W. B. Saunders Company, Philadelphia, 2001 .

VII. Appendices:

1. Flowsheet

"INTRA AORTIC
BALOON PUMP FLOW

Approved:

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Implemented: 2/02